**Cross-Cutting Concerns: Architectural Decision Records (ADRs) for Antivirus Project**

**ADR-01: Observability and Logging**

**Status:** Applicable  
**Context:**  
Observability is essential for malware detection and user trust. Users need to see what files were scanned, what threats were detected, and what actions were taken. Even though the application is local, logs, metrics, and alerts are critical.

**Decision:**  
Implement logging for:

* File scanning progress and results
* Threat detections and their verdicts
* Actions taken (quarantine, delete)

Implement real-time terminal alerts for malware detections.

**Consequences:**

* Improves usability and trust in the system.
* Provides a record for debugging or reviewing scan results.

### **ADR-02: Maintainability and Testability**

**Status:** Applicable  
**Context:**  
Given the project’s modular architecture, implementing A well-structured modular based approach will improve the team’s ability to maintain and extend the project.

**Decision:**

* Use clear modular separation between components (Scanner, Pattern Matcher, AI Classifier, etc.)
* Use consistent coding style with documentation.
* Implement CI/CD if possible, e.g. GitHub Actions for automatic building and testing.
* Consider implementing stubs or mocks for testing each module independently.

**Consequences:**

* Easier to maintain, debug, and extend the application.
* Enables safer collaboration among team members.
* Facilitates future enhancements.